Grade: 3rd – Adult
Time: 1 hour
Season: All

Stream Table

National Science Teaching Standards

A. Science as **INQUIRY**
B. PHYSICAL Science
C. LIFE Science
D. EARTH Science
E. Science **TECHNOLOGY**
F. Science in **PERSONAL** and **SOCIAL PERSPECTIVE**
G. HISTORY and **NATURE** of Science

Background Information:

Iowa has many types of aquatic habitats including lakes, marshes, rivers, ponds, and streams. Our natural lakes and streams have existed for thousands of years, while the lakes we have constructed and the streams we have channeled (straighten) are relatively new habitats. Most constructed lakes, like the lake at Springbrook have been built since the 1930's. During construction of these lakes the trees , brush, and vegetation were removed from shorelines and lake basin, reducing habitat for many aquatic animals. In 1990, the lake at Springbrook had jetties constructed to increase shoreline habitat and recreational opportunities for anglers. Trees cut during the summer of 1995 for the forestry demonstration were placed in the lake as additional habitat.

Iowa has more the 19,000 miles of rivers and streams. There have been many changes in our waterways since the settlement of our state. The most noticeable change is a result of channelization. During channelization backwater area and meandering streams are removed, exposing the streambank to erosion. The lack of pools and riffles in the stream reduces habitat diversity and the riparian habitat may be drastically changed.

Agricultural practices, urban development projects, and mining contribute to the loss of riparian habitat. Riprapping and reshaping streambanks and lake shorelines helps control erosion. Where streams have been channeled, water easily erodes streambeds and increases the nonpoint source pollution in the waterway.

This activity works best following a watershed hike at Springbrook.

Objective:

- Students will demonstrate the effects of channelization.
- Students will see the importance of the riparian habitats.
- Students will create solutions to the problems of soil erosion.

Pre Activity:

- Discuss key words: erosion, channelization, meandering stream, riparian, watershed, ground water, and nonpoint source pollution.

- Read newspaper articles on Iowa's water pollution problems: *Des Moines Register*, February, 2006 (Sunday paper); "Water Quality Standards Issue Now in Legislation," *Iowa Sierran*, Spring, 2006.
- "Trees For Many Reasons," *Project Learning Tree*, pp.387-388.

Equipment:
- Stream table
- Erosion control items (provided by Springbrook)

Procedure:
1. Create 2 habitats: agriculture and natural
2. Have students make a hypothesis about erosion for both streams: meandering, channelized
3. Turn the water on
4. Have students observe what is happening; point out ground water and pond.
5. Observe both streams and draw conclusions about the erosion caused by each. Observe each stream carefully to what is working and what is not.
6. Have students move to the mouth of the streams and observe the amount soil build up…erosion.
7. Divide the group in half; Department of Agriculture and the Department of Natural Resources.
8. Have each group meet and plan how they can improve their half of the environment; try to decrease the erosion.
9. While they are planning, you need to smooth out the "soil" on the stream table and put all props in the middle for both groups to use.
10. When a group has a completed plan let them begin building on their half of the stream table.
11. Build for about 15-20 minutes depending on time.
12. Complete the building
13. Have each team explain what they did to their stream to slow down erosion
14. Turn the water on.
15. Observe your stream…point to what is working and what is not.
16. Move to other side and observe what is working and what is not.
17. Go to mouth of the streams and look at the erosion.
18. Draw conclusions about what worked and what did not.

Post Activity:
- "Deadly Waters" activity, *Project Wild*
- Write business letters to your congress people encouraging them to pass laws and allocate money to clean up Iowa's waters

Post Discussion:
- What caused most of the erosion in your streams?
- What impact did the riparian habitat have on the erosion of your streams?
- What kind of wild life is affected by erosion?
- Discuss the balance in nature…how one species affects another.

- What can our state do to slow the erosion of our top soil down?
- What can you do to help?
- What were the major pollutants of Iowa’s streams and waterways?
- What impact does agriculture have on Iowa’s waterways?